CLAIMS

1. (Original) A method of monitoring a birth process, comprising:

receiving, over time, a plurality of position signals from one or more positioning elements or tissue areas located at at least one of a cervix and a fetal head; and

determining a discrete state of labor of a fetus that is wholly inside a body responsive to said position signals, with a temporal resolution of better than 15 minutes, said discrete state being other than a start or stop of labor and encompassing more than a single contraction, said state including a state other than an abnormal fetal head position.

2. (Original) A method according to claim 1, wherein said one or more positioning elements comprises a wireless transponder.

3. (Original) A method according to claim 1, wherein receiving comprises receiving from one or more tissue areas identifiable using an imaging system.

4. (Original) A method according to claim 1, wherein receiving comprises receiving from at least one positioning element.

5. (Original) A method according to claim 1, wherein said one or more positioning elements comprises a transmitter.

6. (Original) A method according to claim 1, wherein said one or more positioning elements comprises a marker.

7. (Original) A method according to claim 1, wherein said discrete state comprises at least one state from a list of states including: failure to progress, inefficient uterine contractions, onset of active labor, full dilatation, optimal uterine activity, individual maximum slope of dilatation, fetal head internal rotation, fetal head extension, pre-cresting, arrest disorder, canal arrest, abnormal expulsion contractions, normal expulsion contractions, efficacy of drug administration and readiness for delivery.

8. (Original) A method according to claim 7, comprising determining at least 2 states from said list at different times.

9. (Original) A method according to claim 7, comprising determining at least 4 states from said list at different times.

10. (Original) A method according to claim 7, comprising determining at least 6 states from said list at different times.

11. (Original) A method according to claim 1, wherein the position signals comprises fetal head position signals and cervical OS position signals.

12. (Original) A method according to claim 1, wherein the position signals do not comprise absolute cervical dilatation signals.

13. (Original) A method according to claim 1, wherein the position signals comprise absolute cervical dilatation signals.

14. (Original) A method according to claim 13, comprising modifying the cervical dilatation signals to reflect a scale on which full dilatation is 10 cm.

15. (Original) A method according to claim 1, wherein determining comprises determining based on an analysis of short term changes in said signals, within a time period of a contraction cycle.

16. (Original) A method according to claim 15, wherein said analysis comprises an analysis of changes in a fetal head position.

17. (Original) A method according to claim 16, wherein said analysis comprises an analysis of a spatial vector of fetal head motion.

18. (Original) A method according to claim 15, wherein said analysis comprises an analysis of changes in cervical geometry.

19. (Original) A method according to claim 15, wherein said analysis comprises an analysis of rate of change of a position.

20. (Original) A method according to claim 15, wherein said analysis comprises an analysis over a plurality of contractions.

21. (Original) A method according to claim 13, wherein said determining comprises determining based on a duty factor of a plurality of contractions.

22. (Original) A method according to claim 1, wherein said determining comprises determining that a labor is progressing normally.

23. (Original) A method according to claim 1, wherein said determining comprises determining that a labor is progressing abnormally.

24. (Original) A method according to claim 1, wherein said determining comprises determining a type of contraction.

25. (Original) A method according to claim 1, wherein said determining is based on non-geometrical physiological signals of at least one of mother and fetus.

26. (Original) A method according to claim 25, wherein said determining comprises analyzing a phase delay between non-geometric physiological and geometrical measurements.

27. (Original) A method according to claim 25, wherein said physiological signals comprise pressure signals.

28. (Original) A method according to claim 25, wherein said physiological signals comprise EMG signals.

29. (Original) A method according to claim 25, wherein said physiological signals comprise heart rate signals.

30. (Original) A method according to claim 1, wherein determining comprises determining a state on a personalized time/progression scale.

31. (Original) A method according to claim 1, comprising matching a progression of labor to one of a plurality of templates.

32. (Original) A method according to claim 1, comprising estimating a time to reach a future state, based on said signals.

33. (Original) A method according to claim 1, wherein said position signals are acquired using a reference remote from said elements.

34. (Original) A method according to claim 1, comprising determining at least one of an orientation change and magnitude change in a vector of a fetal head.

35. (Original) A method according to claim 34, wherein said change in vector comprises a change in orientation of a fetal head.

36. (Original) A method according to claim 34, comprising generating a head station value indicating the spatial progression of the fetal head in a birth canal.

37. (Original) A method according to claim 34, wherein said vector comprises a vector of motion of said head during a contraction.

38. (Original) A method according to claim 37, comprising comparing said vector to an expected head path in a maternal body.

39. (Original) A method according to claim 37, comprising determining an asymmetry between forward motion and backward motion of said head.

40. (Original) A method of labor management, comprising:

(a) collecting information about a labor process;

(b) generating a personalized progression representation based on said information;

(c) identifying a relationship between a parameter of said representation and a norm, within 20 minutes of said parameter changing its relationship relative to the norm; and

(d) selectively modifying a treatment of the labor responsive to said identification.

41. (Original) A method according to claim 40, wherein said identifying comprises identifying by computer circuitry.

42. (Original) A method according to claim 40, comprising suggesting a modification by computer circuitry.

43. (Original) A method according to claim 40, wherein identifying comprises identifying that said parameter is outside a norm.

44. (Original) A method according to claim 40, wherein identifying comprises identifying that said parameter is inside a norm.

45. (Original) A method according to claim 40, wherein selectively modifying comprises not modifying.

46. (Original) A method according to claim 40, wherein generating said personalized progression representation comprises statistical analysis of said collected information.

47. (Original) A method according to claim 46, wherein said statistical analysis comprises long term analysis.

48. (Original) A method according to claim 46, wherein said statistical analysis comprises short-term analysis.

49. (Original) A method according to claim 46, wherein said statistical analysis comprises generating a histogram.

50. (Original) A method according to claim 40, wherein said personalized progression representation includes an expected rate of change.

51. (Original) A method according to claim 40, wherein said personalized progression representation includes an identification of at least three labor states.

52. (Original) A method according to claim 40, wherein said personalized progression representation comprises an indication that an individual maximum slope is about to be achieved.

53. (Original) A method according to claim 52, wherein said indication comprises a dedicated display.

54. (Original) A method according to claim 40, wherein said indication comprises a state display including a presentation of states according to their relative context and including a history of states.

55. (Original) A method according to claim 40, wherein said indication comprises a display of individual maximum slope.

56. (Original) A method of monitoring a labor process, comprising:

receiving, over time, a plurality of positional information from one or more positioning elements or tissue segments located at at least one of a cervix and a fetal head;

determining at least one change in magnitude of positional information within a contraction;

analyzing said at least one change; and

determining a status of said labor based on said analysis.

57 – 141. (Cancelled)